

CLAIMS:

1. A method of handling data packets in a Wireless Local Area Network (WLAN), comprising:
  - 5 (a) contending for control of a medium over which data is to be transmitted, by a plurality of nodes in the network;
  - (b) when control of the medium has been established by a first node in the network,  
10 transmitting a first data packet from that first node, which has control of the medium, to a second node in the network;
  - (c) receiving, at that second node, the transmitted data packet;
  - 15 (d) generating, at that second node, a combined data/acknowledgement packet which contains both an acknowledgement of receipt of the said first data packet by the said second node and also a second data packet intended for delivery to the said first node  
20 from the said second node; and
  - (e) transmitting the said combined data/acknowledgement packet from the said second node to the said first node.
- 25 2. The method of claim 1, further comprising:
  - (f) receiving, at the first node, the said combined data/acknowledgement packet;
  - (g) generating, at that first node, a further  
combined data/acknowledgement packet which contains  
30 both an acknowledgement of receipt of the said second data packet by the said first node and a third data

packet intended for delivery to the said second node from the said first node; and

(h) transmitting the further combined data/acknowledgement packet from the said first node  
5 to the said second node.

3. The method of claim 2, further comprising:

(i) receiving at the second node, the said further combined data/acknowledgement packet;

10 (j) generating, at that second node, a still further combined data/acknowledgement packet which contains both an acknowledgement of receipt of the said third data packet by the said second node and a fourth data packet intended for delivery to the said  
15 first node from the said second node; and

(k) transmitting the still further combined data/acknowledgement packet from the said second node to the said first node.

20 4. The method of claim 3, further comprising:

iteratively repeating steps (f) to (h) for each of the fifth, sixth, seventh, ...n<sup>th</sup> data packets.

5. The method of claim 4, wherein the iterative  
25 repetition terminates when either a maximum time of medium control by the first node is reached, or when there are no further data packets to be transmitted.

6. The method of any preceding claim, wherein the  
30 step (a) of contending for control of the medium is

carried out in accordance with carrier sense multiple access with collision avoidance (CSMA/CA).

7. The method of claim 6, wherein the step (a) of  
5 contention for control of the medium is in accordance with Enhanced Distributed Coordination Function Channel Access (EDCA).

8. The method of any one of claims 2, 3, 4 or 5,  
10 further comprising, following receipt of the, or the further, data/acknowledgement packet, the step of extracting, from that data/acknowledgement packet, the data contained therein, and extracting the acknowledgement therefrom as well.

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9. The method of claim 8, wherein the step of extracting are carried out when it is determined by the receiving node either that the received packet is longer than an acknowledgement of receipt alone, or  
20 that the received packet has a header which indicates that both data and acknowledgement are contained therein.

10. The method of any preceding claim wherein the  
25 step of generating a combined data/acknowledgement packet comprises either concatenating an IEEE 802.11 ACK frame with a data payload, or comprises altering a header to an IEEE 802.11 data frame to indicate that the frame carries both a data payload and an  
30 acknowledgement of receipt.